We Claim:

1. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a catechol moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a chemical moiety selected from the group consisting of a hydroxyl moiety, a phosphate moiety, a sulfate moiety, a carboxylate moiety, an amide moiety, a guanidino moiety and an amine moiety, wherein;

the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the chemical moiety of the hydrophilic polymer and the catechol moiety of the medical device surface.

2. The method of claim 1 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

3. The method of claim 1 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

4. The method of claim 1 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a

polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

5. The method of claim 1 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

6. The method of claim 1 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

7. The method of claim 1 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

8. The method of claim 1 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

9. The method of claim 1 wherein the surface comprises a primer.

10. The method of claim 9 wherein the primer comprises the catechol moiety.

11. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a quinone moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a chemical moiety selected from the group consisting of an amine moiety, a sulfhydryl moiety and a hydroxyl moiety, wherein;

the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the chemical moiety of the hydrophilic polymer and the quinone moiety of the medical device surface.

12. The method of claim 11 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

13. The method of claim 11 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

14. The method of claim 11 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

15. The method of claim 11 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

16. The method of claim 11 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

17. The method of claim 11 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

18. The method of claim 11 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

19. The method of claim 11 wherein the surface comprises a primer.

20. The method of claim 19 wherein the primer comprises the quinone moiety.

21. The method of claim 11 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

22. The method of claim 21 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate,

potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

23. The method of claim 11 wherein the amine moiety is formed by combining an amine forming agent with an amide moiety.

24. The method of claim 23 wherein the amine forming agent is selected from the group consisting of bromine, bromide, bromite, hypobromite, chlorine, chloride, chlorite, hypochlorite, lead tetraacetate, benzyltrimethylammonium tribromide, [bis(trifluoroacetoxy)iodo]benzene, hydroxy(tosyloxy)iodobenzene and iodosylbenzene.

25. The method of claim 11 further comprising the combining of at least one reducing agent selected from the group consisting of sodium borohydride, sodium cyanoborohydride and amine borane.

26. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a quinone moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a guanidino moiety, wherein; the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the guanidino moiety of the hydrophilic polymer and the quinone moiety of the medical device surface.

27. The method of claim 26 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

28. The method of claim 26 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

29. The method of claim 26 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

30. The method of claim 26 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

31. The method of claim 26 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

32. The method of claim 26 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

33. The method of claim 26 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

34. The method of claim 26 wherein the surface comprises a primer.

35. The method of claim 34 wherein the primer comprises the quinone moiety.

36. The method of claim 26 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

37. The method of claim 36 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

38. The method of claim 26 wherein the guanidino moiety is formed by combining a guanidino forming agent with an amine moiety.

39. The method of claim 38 wherein the guanidino forming agent is selected from the group consisting of S-ethylthiouronium bromide, S-ethylthiouronium chloride, O-methylisourea, O-methylisouronium sulfate, O-methylisourea hydrogen sulfate, S-methylisothiourea, 2-methyl-1-nitroisourea, aminoiminomethanesulfonic acid, cyanamide, cyanoguanide, dicyandiamide, 3,5-dimethyl-1-guanylpyrazole nitrate and 3,5-dimethyl pyrazole.

40. The method of claim 26 further comprising the combining of a stabilizing agent.

41. The method of claim 40 wherein the stabilizing agent is a borate ion.

42. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a semiquinone moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a chemical moiety capable of forming a chemical bond with a semiquinone moiety, wherein;

the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the chemical moiety of the hydrophilic polymer and the semiquinone moiety of the medical device surface.

43. The method of claim 42 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

44. The method of claim 42 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

45. The method of claim 42 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin,

a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

46. The method of claim 42 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

47. The method of claim 42 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

48. The method of claim 42 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

49. The method of claim 42 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

50. The method of claim 42 wherein the surface comprises a primer.

51. The method of claim 50 wherein the primer comprises the semiquinone moiety.

52. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a chemical moiety selected from the group consisting of a hydroxyl moiety, a phosphate moiety, a sulfate moiety, a carboxylate moiety, an amide moiety, a guanidino moiety and an amine moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a catechol moiety, wherein; the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the catechol moiety of the hydrophilic polymer and the chemical moiety of the medical device surface.

53. The method of claim 52 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

54. The method of claim 52 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

55. The method of claim 52 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

56. The method of claim 52 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

57. The method of claim 52 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

58. The method of claim 52 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

59. The method of claim 52 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

60. The method of claim 52 wherein the surface comprises a primer.

61. The method of claim 60 wherein the primer comprises the chemical moiety.

62. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a chemical moiety selected from the group consisting of an amine moiety, a sulfhydryl moiety and a hydroxyl moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a quinone moiety, wherein;

the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the quinone moiety of the hydrophilic polymer and the chemical moiety of the medical device surface.

63. The method of claim 62 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

64. The method of claim 62 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

65. The method of claim 62 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

66. The method of claim 62 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-

acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

67. The method of claim 62 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

68. The method of claim 62 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

69. The method of claim 62 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

70. The method of claim 62 wherein the surface comprises a primer.

71. The method of claim 70 wherein the primer comprises the chemical moiety.

72. The method of claim 62 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

73. The method of claim 72 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

74. The method of claim 62 wherein the amine moiety is formed by combining an amine forming agent with an amide moiety.

75. The method of claim 74 wherein the amine forming agent is selected from the group consisting of bromine, bromide, bromite, hypobromite, chlorine, chloride, chlorite, hypochlorite, lead tetraacetate, benzyltrimethylammonium tribromide, [bis(trifluoroacetoxy)iodo]benzene, hydroxy(tosyloxy)iodobenzene and iodosylbenzene.

76. The method of claim 62 further comprising the combining of at least one reducing agent selected from the group consisting of sodium borohydride, sodium cyanoborohydride and amine borane.

77. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a guanidino moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a quinone moiety, wherein;

the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the quinone moiety of the hydrophilic polymer and the guanidino moiety of the medical device surface.

78. The method of claim 77 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

79. The method of claim 77 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

80. The method of claim 77 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a

titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

81. The method of claim 77 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

82. The method of claim 77 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

83. The method of claim 77 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

84. The method of claim 77 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

85. The method of claim 77 wherein the surface comprises a primer.

86. The method of claim 85 wherein the primer comprises the guanidino moiety.

87. The method of claim 77 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

88. The method of claim 87 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

89. The method of claim 77 wherein the guanidino moiety is formed by combining a guanidino forming agent with an amine moiety.

90. The method of claim 89 wherein the guanidino forming agent is selected from the group consisting of S-ethylthiouronium bromide, S-ethylthiouronium chloride, O-methylisourea, O-methylisouronium sulfate, O-methylisourea hydrogen sulfate, S-methylisothiourea, 2-methyl-1-nitroisourea, aminoiminomethanesulfonic acid, cyanamide, cyanoguanide, dicyandiamide, 3,5-dimethyl-1-guanylpyrazole nitrate and 3,5-dimethyl pyrazole.

91. The method of claim 77 further comprising the combining of a stabilizing agent.

92. The method of claim 91 wherein the stabilizing agent is a borate ion.

93. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a chemical moiety capable of forming a chemical bond with a semiquinone moiety disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a semiquinone moiety, wherein; the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the semiquinone moiety of the hydrophilic polymer and the chemical moiety of the medical device surface.

94. The method of claim 93 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

95. The method of claim 93 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

96. The method of claim 93 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

97. The method of claim 93 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

98. The method of claim 93 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

99. The method of claim 93 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

100. The method of claim 93 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

101. The method of claim 93 wherein the surface comprises a primer.

102. The method of claim 101 wherein the primer comprises the chemical moiety.

103. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a catechol moiety disposed on the surface of said device; and

(b) the biomolecule comprises a chemical moiety selected from the group consisting of a hydroxyl moiety, a phosphate moiety, a sulfate moiety, a

carboxylate moiety, an amide moiety, a guanidino moiety and an amine moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the chemical moiety of the biomolecule and the catechol moiety of the hydrophilic polymer.

104. The method of claim 103 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

105. The method of claim 103 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

106. The method of claim 103 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

107. The method of claim 103 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a

polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

108. The method of claim 103 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

109. The method of claim 103 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

110. The method of claim 103 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

111. The method of claim 103 wherein the surface comprises a primer.

112. The method of claim 103 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a

drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

113. The method of claim 103 wherein the biomolecule is a naturally occurring biomolecule.

114. The method of claim 103 wherein the biomolecule is a chemically synthesized biomolecule.

115. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a quinone moiety disposed on the surface of said device; and

(b) the biomolecule comprises a chemical moiety selected from the group consisting of an amine moiety, a sulfhydryl moiety and a hydroxyl moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the chemical moiety of the biomolecule and the quinone moiety of the hydrophilic polymer.

116. The method of claim 115 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

117. The method of claim 115 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

118. The method of claim 115 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

119. The method of claim 115 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

120. The method of claim 115 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

121. The method of claim 115 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

122. The method of claim 115 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

123. The method of claim 115 wherein the surface comprises a primer.

124. The method of claim 115 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

125. The method of claim 115 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

126. The method of claim 115 wherein the amine moiety is formed by combining an amine forming agent with an amide moiety.

127. The method of claim 115 wherein the amine forming agent is selected from the group consisting of bromine, bromide, bromite, hypobromite, chlorine, chloride, chlorite, hypochlorite, lead tetraacetate, benzyltrimethylammonium tribromide, [bis(trifluoroacetoxy)iodo]benzene, hydroxy(tosyloxy)iodobenzene and iodosylbenzene.

128. The method of claim 115 further comprising the combining of at least one reducing agent selected from the group consisting of sodium borohydride, sodium cyanoborohydride and amine borane.

129. The method of claim 115 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a

structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

130. The method of claim 115 wherein the biomolecule is a naturally occurring biomolecule.

131. The method of claim 115 wherein the biomolecule is a chemically synthesized biomolecule.

132. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a quinone moiety disposed on the surface of said device; and

(b) the biomolecule comprises a guanidino moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the guanidino moiety of the biomolecule and the quinone moiety of the hydrophilic polymer.

133. The method of claim 132 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

134. The method of claim 132 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

135. The method of claim 132 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

136. The method of claim 132 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

137. The method of claim 132 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

138. The method of claim 132 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

139. The method of claim 132 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

140. The method of claim 132 wherein the surface comprises a primer.

141. The method of claim 132 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

142. The method of claim 141 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

143. The method of claim 132 wherein the guanidino moiety is formed by combining a guanidino forming agent with an amine moiety.

144. The method of claim 143 wherein the guanidino forming agent is selected from the group consisting of S-ethylthiouronium bromide, S-ethylthiouronium chloride, O-methylisourea, O-methylisouronium sulfate, O-methylisourea hydrogen sulfate, S-methylisothiourea, 2-methyl-1-nitroisourea, aminoiminomethanesulfonic acid, cyanamide, cyanoguanide, dicyandiamide, 3,5-dimethyl-1-guanylpyrazole nitrate and 3,5-dimethyl pyrazole.

145. The method of claim 132 further comprising combining of a stabilizing agent.

146. The method of claim 132 wherein the stabilizing agent is a borate ion.

147. The method of claim 132 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

148. The method of claim 132 wherein the biomolecule is a naturally occurring biomolecule.

149. The method of claim 132 wherein the biomolecule is a chemically synthesized biomolecule.

150. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a semiquinone moiety disposed on the surface of said device; and

(b) the biomolecule comprises a chemical moiety capable of forming a chemical bond with a semiquinone moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the chemical moiety of the biomolecule and the semiquinone moiety of the hydrophilic polymer.

151. The method of claim 150 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an

extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

152. The method of claim 150 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

153. The method of claim 150 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

154. The method of claim 150 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

155. The method of claim 150 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

156. The method of claim 150 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

157. The method of claim 150 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

158. The method of claim 150 wherein the surface comprises a primer.

159. The method of claim 150 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

160. The method of claim 150 wherein the biomolecule is a naturally occurring biomolecule.

161. The method of claim 150 wherein the biomolecule is a chemically synthesized biomolecule.

162. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a chemical moiety selected from the group consisting of a hydroxyl moiety, a phosphate moiety, a sulfate moiety, a carboxylate moiety, an amide moiety, a guanidino moiety and an amine moiety disposed on the surface of said device; and

(b) the biomolecule comprises a catechol moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the catechol moiety of the biomolecule and the chemical moiety of the hydrophilic polymer.

163. The method of claim 162 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

164. The method of claim 162 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

165. The method of claim 162 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin,

a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

166. The method of claim 162 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

167. The method of claim 162 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

168. The method of claim 162 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

169. The method of claim 162 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

170. The method of claim 162 wherein the surface comprises a primer.

171. The method of claim 162 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a

structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

172. The method of claim 162 wherein the biomolecule is a naturally occurring biomolecule.

173. The method of claim 162 wherein the biomolecule is a chemically synthesized biomolecule.

174. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a chemical moiety selected from the group consisting of an amine moiety, a sulfhydryl moiety and a hydroxyl moiety disposed on the surface of said device; and

(b) the biomolecule comprises a quinone moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the quinone moiety of the biomolecule and the chemical moiety of the hydrophilic polymer.

175. The method of claim 174 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

176. The method of claim 174 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

177. The method of claim 174 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

178. The method of claim 174 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

179. The method of claim 174 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

180. The method of claim 174 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

181. The method of claim 174 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

182. The method of claim 174 wherein the surface comprises a primer.

183. The method of claim 174 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

184. The method of claim 183 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

185. The method of claim 174 wherein the amine moiety is formed by combining an amine forming agent with an amide moiety.

186. The method of claim 185 wherein the amine forming agent is selected from the group consisting of bromine, bromide, bromite, hypobromite, chlorine, chloride, chlorite, hypochlorite, lead tetraacetate, benzyltrimethylammonium tribromide, [bis(trifluoroacetoxy)iodo]benzene, hydroxy(tosyloxy)iodobenzene and iodosylbenzene.

187. The method of claim 174 further comprising the combining of at least one reducing agent selected from the group consisting of sodium borohydride, sodium cyanoborohydride and amine borane.

188. The method of claim 174 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an

antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

189. The method of claim 174 wherein the biomolecule is a naturally occurring biomolecule.

190. The method of claim 174 wherein the biomolecule is a chemically synthesized biomolecule.

191. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a guanidino moiety disposed on the surface of said device; and

(b) the biomolecule comprises a quinone moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the quinone moiety of the biomolecule and the guanidino moiety of the hydrophilic polymer.

192. The method of claim 191 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

193. The method of claim 191 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

194. The method of claim 191 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

195. The method of claim 191 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

196. The method of claim 191 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

197. The method of claim 191 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

198. The method of claim 191 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

199. The method of claim 191 wherein the surface comprises a primer.

200. The method of claim 191 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

201. The method of claim 200 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate, potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

202. The method of claim 191 wherein the guanidino moiety is formed by combining a guanidino forming agent with an amine moiety.

203. The method of claim 202 wherein the guanidino forming agent is selected from the group consisting of S-ethylthiouronium bromide, S-ethylthiouronium chloride, O-methylisourea, O-methylisouronium sulfate, O-methylisourea hydrogen sulfate, S-methylisothiourea, 2-methyl-1-nitroisourea, aminoiminomethanesulfonic acid, cyanamide, cyanoguanide, dicyandiamide, 3,5-dimethyl-1-guanylpyrazole nitrate and 3,5-dimethyl pyrazole.

204. The method of claim 191 further comprising combining of a stabilizing agent.

205. The method of claim 204 wherein the stabilizing agent is a borate ion.

206. The method of claim 191 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

207. The method of claim 191 wherein the biomolecule is a naturally occurring biomolecule.

208. The method of claim 191 wherein the biomolecule is a chemically synthesized biomolecule.

209. A method of coating a biomolecule on a surface of a medical device, wherein;

(a) the medical device has a hydrophilic polymer comprising a chemical moiety capable of forming a chemical bond with a semiquinone moiety disposed on the surface of said device; and

(b) the biomolecule comprises a semiquinone moiety, wherein;

the method comprises coating the medical device with the biomolecule to form a chemical bond between the semiquinone moiety of the biomolecule and the chemical moiety of the hydrophilic polymer.

210. The method of claim 209 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an

extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

211. The method of claim 209 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

212. The method of claim 209 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

213. The method of claim 209 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

214. The method of claim 209 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

215. The method of claim 209 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

216. The method of claim 209 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

217. The method of claim 209 wherein the surface comprises a primer.

218. The method of claim 209 wherein the biomolecule is selected from the group consisting of an anticoagulant agent, an antithrombotic agent, a clotting agent, a platelet agent, a blood agent, an anti-inflammatory, an antibody, an antigen, an immunoglobulin, a defense agent, an enzyme, a hormone, a growth factor, a neurotransmitter, a cytokine, a regulatory agent, a transport agent, a fibrous agent, a viral agent, a protein, a glycoprotein, a globular protein, a structural protein, a membrane protein, a cell attachment protein, a viral protein, a peptide, a glycopeptide, a structural peptide, a membrane peptide, a cell attachment peptide, a proteoglycan, a toxin, an antibiotic agent, antibacterial agent, antimicrobial agent, a polysaccharide, a carbohydrate, a fatty acid, a catalyst, a drug, a vitamin, a DNA segment, a RNA segment, a nucleic acid, a lectin, a dye and a ligand.

219. The method of claim 209 wherein the biomolecule is a naturally occurring biomolecule.

220. The method of claim 209 wherein the biomolecule is a chemically synthesized biomolecule.

221. A method of coating a hydrophilic polymer on a surface of a medical device, wherein;

(a) the medical device has a metallic ion or a metal oxide disposed on the surface of said device; and

(b) the hydrophilic polymer comprises a catechol moiety, wherein;

the method comprises coating the medical device with the hydrophilic polymer to form a chemical bond between the catechol moiety of the hydrophilic polymer and the metallic ion or the metal oxide of the medical device surface.

222. The method of claim 221 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprosthesis medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

223. The method of claim 221 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

224. The method of claim 221 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

225. The method of claim 221 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer comprising a hydrophilic chemical moiety, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

226. The method of claim 221 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

227. The method of claim 221 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

228. The method of claim 221 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

229. The method of claim 221 wherein the surface comprises a primer.

230. The method of claim 229 wherein the primer comprises the metallic ion or the metal oxide.

231. The method of claim 221 wherein the quinone moiety is formed by combining an oxidative agent with a catechol moiety.

232. The method of claim 231 wherein the oxidative agent is selected from the group consisting of periodic acid, sodium periodate, alkali metal periodate,

potassium periodate, catechol oxidase, tyrosinase, catecholase, polyphenoloxidase, phenoloxidase, phenolase, oxygen and hydrogen peroxide.

233. A coated medical device comprising a catechol moiety disposed on the surface of the medical device and chemically bonded to a hydrophilic polymer.

234. A coated medical device comprising a hydrophilic polymer comprising a catechol moiety chemically bonded to the surface of the medical device.

235. A coated medical device comprising a hydrophilic polymer disposed on the surface of the medical device, the hydrophilic polymer comprising a catechol moiety chemically bonded to a biomolecule.

236. A coated medical device comprising a hydrophilic polymer disposed on the surface of the medical device, a biomolecule comprising a catechol moiety chemically bonded to the hydrophilic polymer.